

CLAIMS

1. A wideband 180° microwave phase switch structure in
microwaves, or millimetric waves, characterised by being
5 constituted by means of a microwave or millimetric wave
circuit with two possible input ports and another two output
ports in such a way that only an input and an output are
simultaneously connected to an exterior circuit. The other
input and output remains disconnected from the exterior
10 circuit. Each input and output port is connected by means of
a transmission or waveguide line of equal length to half the
length of wave corresponding to the central frequency of a
specific band, with the particularity that each line has a
root of two impedance multiplied by the characteristic
15 impedance of the system it belongs to, provided that each
input port is connected to a different output port by means
of a transmission or waveguide line with equal length to
half the length of wave corresponding to the central
frequency of the specific band, with a characteristic root
20 of two impedance multiplied by the characteristic impedance
of the system it belongs to, and that the central points of
the transmission or waveguide lines between the input and
the output ports are connected by means of a transmission or
waveguide line, the length of which is equal to half the
25 length of wave corresponding to the central frequency of the
specific band, with an impedance equal to the characteristic
impedance of the system it belongs to, divided by the root
of two.

30 2. A wideband 180° microwave phase switch structure in
microwaves, or millimetric waves, according to claim 1,
characterized in that it incorporates optimisation means of
the impedances of each transmission or waveguide line in
order to obtain a 180° phase difference between a specific

input signal measured at each output of the structure and to improve the transmission loss and return loss in a specific bandwidth.

5 3. A wideband 180° microwave phase switch structure in
microwaves, or millimetric waves, according to Claims 1 and
2, characterised in that it is constituted by FET
transistor, HEMT transistor or PIN diode types of switches
connected in series to each input port, output port or to
10 all of them.

4. A wideband 180° microwave phase switch structure in
microwaves, or millimetric waves, according to claim 3,
characterised in that each input with connected switch is
15 connected to one single input port and each output with
connected switch to one single output port, in such a way,
that the input or output of an exterior circuit can be
switched between the input or output ports of the structure
with connected switches.

20 5. A wideband 180° microwave phase switch structure in
microwaves, or millimetric waves, according to Claim 3,
characterised in that each connected switch is connected to
one single input port and each output with switch connected
25 to one single output port by means of a transmission or
waveguide line of equal length to half the length of wave
corresponding to the central frequency of a specific band
with an equal impedance to the characteristic impedance of
the system it belongs to, in such a way, that the input or
30 output of an exterior circuit can switch between the input
or output ports of the structure with connected switches.

6. A wideband 180° microwave phase switch structure in
microwaves, or millimetric waves, according to Claim 3,

characterised in that each input with switch is connected to one single input port and each output with switch is connected to one single output port by means of a transmission or waveguide line of any length with an equal impedance to the characteristic impedance of the system it belongs to and that is terminated by a FET transistor, HEMT transistor or PIN diode type of switch in series, in such a way that the input or output of an exterior circuit can be switched between the input or output ports of the structure that has switches connected.

7. A wideband 180° microwave phase switch structure in microwaves, or millimetric waves, according to Claims 1 and 2, characterised in that it is constituted by FET transistor, HEMT transistor or PIN diode type of switches connected parallel (Shunt) to each transmission or waveguide line associated to each input port, output port or to all of them, with an equal impedance to the characteristic impedance of the system it belongs to and an equal length to a quarter of the wave length corresponding to the central frequency of the specific band.

8. A wideband 180° microwave phase switch structure in microwaves, or millimetric waves, according to Claim 7, characterised in that each output switch is connected to one single output port and each input switch is connected to one single input port by means of a transmission or waveguide line of equal length to a quarter of the length of wave corresponding to the central frequency of the specific band with an equal impedance to the characteristic impedance of the system it belongs to, in such a way, that the input or output of an exterior circuit can be switched between the input or output ports of the structure with connected switches.

9. A wideband 180° microwave phase switch structure in
microwaves, or millimetric waves, according to Claims 3, 4,
5, 6, 7 and 8, characterized in that it constitutes
5 impedance optimisation means of each transmission or
waveguide line to obtain a 180° phase difference between the
output signals of each specific switching condition of the
switches by a specific input signal and to improve the
transmission loss and the return loss of a specific band
10 width.

10. A wideband 180° microwave phase switch structure in
microwaves, or millimetric waves, according to Claims 5, 6,
7, 8 and 9, characterised in that it is constituted by
15 optimisation means of the transmission or waveguide line
lengths associated to each switch to obtain a 180° phase
difference between the output signals of each specific
switching condition of the switches by a specific input
signal and to improve the transmission losses and return
20 losses of a specific band width.